



STATE OF MAINE
DEPARTMENT OF ENVIRONMENTAL PROTECTION

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**Fairchild Semiconductor Corporation
Cumberland County
South Portland, Maine
A-370-71-V-R (SM)**

**Departmental
Findings of Fact and Order
Air Emission License**

After review of the air emissions license renewal application, staff investigation reports and other documents in the applicant's file in the Bureau of Air Quality, pursuant to 38 M.R.S.A., §344 and §590, the Department finds the following facts:

I. REGISTRATION

A. Introduction

Fairchild Semiconductor Corporation (Fairchild Semiconductor) of South Portland, Maine has applied to renew its Air Emission License permitting the operation of emission sources associated with the production of micro-circuits on thin silica wafers at its semiconductor manufacturing facility.

This renewal contains fuel burning equipment capacity updates which have been better defined since the last renewal, removal of generator 2, and removal of the quartz cleaning process. It also contains a revised boiler stack opacity limit and requires acid/alkaline scrubber testing.

B. Emission Equipment

The following equipment is addressed in this air emission license:

Boilers and VOC Unit Burner

Equipment	Maximum Capacity (MMBtu/hr)	Fuel Type	Maximum Firing Rate	Stack #
Boiler #1	12.53	#2 fuel oil (ASTM D396)	83.5 gal/hr	2
		Natural gas	12,165 scf/hr	
Boiler #2	20.7	#2 fuel oil (ASTM D396)	147 gal/hr	2
		Natural gas	20,097 scf/hr	
Boiler #3	20.9	#2 fuel oil (ASTM D396)	148 gal/hr	2
		Natural gas	20,291 scf/hr	
Boiler #4	21.2	#2 fuel oil (ASTM D396)	150 gal/hr	2
		Natural gas	20,582 scf/hr	
VOC Abatement Unit	4.0	Natural gas	3883 scf/hr	3
		Propane back-up	42.55 gal/hr	

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Back-up Generators

<u>Equipment*</u>	<u>Maximum Capacity (MMBtu/hr)</u>	<u>Fuel Type, % Sulfur</u>	<u>Maximum Firing Rate (gal/hr)</u>
Fire Pump (Building 3)	0.72	diesel, 0.05%	5.3
Generator 1 (Stack Yard)	2.2	diesel, 0.05%	16.1
Generator 3 (Building 5)	2.2	diesel, 0.05%	16.1
Generator 4 (Building 6)	4.5	diesel, 0.05%	32.8
Generator 5 (Stack Yard)	4.17	diesel, 0.05%	30.5

* Note: Generator 2 has been removed.

Process Equipment

The following process vents are controlled:

<u>Process ID</u>	<u>Control Type</u>
Building 2	
EF 2-1 (Acid)	Wet Scrubber
EF 2-1A (Acid)	Wet Scrubber
EF 2-45 A & B (Alkaline)	Wet Scrubber
Building 4	
EF 4-1 A & B (Process)	Wet Scrubber and Fabric Filter
Building 5	
EF 5-13 (Acid)	Wet Scrubber
EF 5-14 (Acid)	Wet Scrubber
EF 5-33 A & B (Alkaline)	Wet Scrubber
Building 6	
EF 6-2 (Emergency Release Acid)	Emergency Release Scrubber
Building 12	
EF 12-209 (Acid)	Wet Scrubber
EF 12-329 (Alkaline)	Wet Scrubber
EF 12-330 (plant-wide VOC)	VOC Collection and abatement
EF 12-331 (silicon carbide dust, bead blast)	Fabric Filter
EF 12-332 (aluminum oxide dust, bead blast)	Fabric Filter
EF 12-336 (aluminum dust, flame spray)	Fabric Filter
Building 17	
EF 17-101/103 (Acid)	Wet Scrubber
EF 17-102 (Alkaline)	Wet Scrubber

Fairchild Semiconductor operates a solvent degreaser at the facility.

Fairchild Semiconductor also has insignificant activities including, but not limited to, storage tanks (fuel oil, diesel, waste solvent, liquid hydrogen, liquid nitrogen, liquid argon), heat exhaust vents, and natural gas-fired burn boxes.

C. Application Classification

The application for Fairchild Semiconductor does not include the licensing of increased emissions or the installation of new or modified equipment. Therefore, the license is considered to be a renewal of current licensed emission units only and has been processed through *Major and Minor Source Air Emission License Regulations*, 06-096 CMR 115 (last amended December 24, 2005). With facility-wide emission restrictions, Fairchild Semiconductor is licensed below the major source thresholds and is considered a synthetic minor.

II. BEST PRACTICAL TREATMENT (BPT)

A. Introduction

In order to receive a license the applicant must control emissions from each unit to a level considered by the Department to represent Best Practical Treatment (BPT), as defined in *Definitions Regulation*, 06-096 CMR 100 (last amended December 24, 2005). Separate control requirement categories exist for new and existing equipment as well as for those sources located in designated non-attainment areas.

BPT for existing emissions equipment means that method which controls or reduces emissions to the lowest possible level considering:

- the existing state of technology;
- the effectiveness of available alternatives for reducing emissions from the source being considered; and
- the economic feasibility for the type of establishment involved.

Process Description

Fairchild Semiconductor manufactures semiconductors on silicon wafers. Each type and size of semiconductor manufactured goes through the same general process steps, but the complexity and structural makeup between the products are slightly different. Oxide and metallic layers are built up on the blank wafers with changes or additions in chemicals or process parameters to build the various layers to the required specifications. The manufacturing processes include repeated batch operation steps such as precleaning, doping, photo mask development, etching, backgrinding, and cleaning.

The wafers are first pre-cleaned with chemicals in cleaning tanks for a specific period of time. After each cleaning tank, the wafers are rinsed with de-ionized water. Following the pre-cleaning steps, the wafers are sent to diffusion furnaces where the initial layer of oxide is grown on the wafer. Depending on the stage of the oxide layer growth, layer number or product type, the operating parameters may vary significantly. The introduction of impurities (doping) may occur in the diffusion chambers if required.

After oxidation, the wafers are placed on photoresist coating equipment. The wafers are dried then photoresist (a light sensitive chemical) is applied. The wafers are baked and each wafer is exposed to a light beam shot through a mask containing the desired network configuration. After exposure, the wafer is developed using a photoresist fixer.

Before etching, some wafers are sent to the ion implanting area. Impurities are deposited into the layer(s) using a high speed particle accelerator. Etching removes the oxide which was not fixed in the development stage. Either a gas or liquid chemical process is used for this removal. After etching, the remaining photoresist on top of the fixed portion of the wafer is stripped with sulfuric acid/hydrogen peroxide mix or carbon tetrafluoride and oxygen.

After the required layers are formed, the wafers are transferred to another room where the back side of the disk is ground down to specifications. The wafers are packaged and shipped to another Fairchild plant for testing and assembly into the finished product.

Semiconductor fabrication makes use of various acids, alkalis, and VOC containing solvents in the different manufacturing tools utilized in each step. Tools are defined as chemical baths consisting of acids or alkalis or solvents. The VOC emitting tools are controlled with a VOC abatement unit during April 1 to September 30, which includes the ozone season. The acid and alkali tools are controlled with wet scrubbers.

B. Boilers 1, 2, 3, and 4

Fairchild Semiconductor operates four boilers with the following capacities and manufacture/installation dates (for all boilers, the date of manufacturer and date of installation are the same):

	<u>Capacity</u>	<u>Date</u>
Boiler 1	12.53 MMBtu/hr	1982
Boiler 2	20.7 MMBtu/hr	1980
Boiler 3	20.9 MMBtu/hr	1966
Boiler 4	21.2 MMBtu/hr	1966

The capacities have been revised slightly from the previous renewal based on updated information. All of the boilers fire natural gas or #2 fuel oil. The #2 fuel oil fired shall meet the requirements of ASTM D396 (no greater than 0.5% sulfur). The four boilers exhaust through a common stack (stack 2).

Based on the ages of the boilers, the units are not subject to the New Source Performance Standards (NSPS) 40 CFR Part 60, Subpart Dc, *Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units*, for units greater than 10 MMBtu/hr manufactured after June 9, 1989.

BPT for each boiler is the following (slight adjustments have been made from previous limits because of capacity revisions):

PM/PM ₁₀ –	natural gas: based on previous license: 0.01 lb/MMBtu # 2 fuel oil: based on previous license: 0.1 lb/MMBtu Boiler 1 0.13 lb/hr nat'l gas; 1.25 lb/hr oil Boiler 2 0.21 lb/hr nat'l gas; 2.07 lb/hr oil Boiler 3 0.21 lb/hr nat'l gas; 2.09 lb/hr oil Boiler 4 0.21 lb/hr nat'l gas; 2.12 lb/hr oil
SO ₂ –	natural gas: based on AP-42 Table 1.4-2 dated 7/98: 0.6 lb/MMscf #2 fuel oil: based on meeting the criteria found in ASTM 396D (0.5% max. sulfur) Boiler 1 0.01 lb/hr nat'l gas; 6.31 lb/hr oil Boiler 2 0.01 lb/hr nat'l gas; 10.42 lb/hr oil Boiler 3 0.01 lb/hr nat'l gas; 10.53 lb/hr oil Boiler 4 0.01 lb/hr nat'l gas; 10.68 lb/hr oil
NO _x –	natural gas: based on AP-42 Table 1.4-1 dated 7/98: 100 lb/MMBtu #2 fuel oil: based on previous license: 0.3 lb/MMBtu Boiler 1 1.22 lb/hr nat'l gas; 3.76 lb/hr oil Boiler 2 2.01 lb/hr nat'l gas; 6.21 lb/hr oil Boiler 3 2.03 lb/hr nat'l gas; 6.27 lb/hr oil Boiler 4 2.06 lb/hr nat'l gas; 6.36 lb/hr oil
CO –	natural gas: based on AP-42 Table 1.4-1 dated 7/98: 84 lb/MMscf # 2 fuel oil: based on AP-42 Table 1.3-1 dated 9/98: 5 lb/1000 gal Boiler 1 1.02 lb/hr nat'l gas; 0.45 lb/hr oil Boiler 2 1.69 lb/hr nat'l gas; 0.74 lb/hr oil Boiler 3 1.70 lb/hr nat'l gas; 0.75 lb/hr oil Boiler 4 1.73 lb/hr nat'l gas; 0.76 lb/hr oil
VOC –	natural gas: based on AP-42 Table 1.4-2 dated 7/98: 5.5 lb/MMscf # 2 fuel oil: based on AP-42 Table 1.3-1 dated 9/98: 0.2 lb/1000 gal Boiler 1 0.07 lb/hr nat'l gas; 0.02 lb/hr oil Boiler 2 0.11 lb/hr nat'l gas; 0.03 lb/hr oil Boiler 3 0.11 lb/hr nat'l gas; 0.03 lb/hr oil Boiler 4 0.11 lb/hr nat'l gas; 0.03 lb/hr oil

Opacity – visible emissions from the common stack serving Boilers 1, 2, 3, and 4 shall not exceed an opacity of 20% on a six (6) minute block average basis, except for no more than three (3) six (6) minute block averages in a 3-hour period.

Periodic Monitoring

Periodic monitoring for the boilers shall include recordkeeping to document fuel use both monthly and on a 12 month rolling total basis. Documentation shall include certification of the type of fuel used.

C. Back-up Fire Pump and Generators

Fairchild Semiconductor operates a fire pump and four back-up diesel generators with the following capacities and installation dates (The date of manufacturer and date of installation are the same for the fire pump and generators 3 and 4. Generator 1 was manufactured in 1996 and generator 5 was manufactured in 2002):

	<u>Capacity</u>	<u>Location</u>	<u>Install Date</u>
Fire Pump	0.72 MMBtu/hr	Building 3	1966
Generator 1	2.2 MMBtu/hr	Stack Yard	1999
Generator 3	2.2 MMBtu/hr	Building 5	1993
Generator 4	4.5 MMBtu/hr	Building 6	1994
Generator 5	4.17 MMBtu/hr	Stack Yard	2004

Generator 2 has been removed from service.

The back-up generator units all fire diesel fuel with a sulfur content not to exceed 0.05% and shall each be limited to 500 hours of operation on a 12 month rolling total basis. The units may be used for generator maintenance purposes (i.e. periodic testing of the units) and for situations arising from sudden and reasonably unforeseeable events beyond the control of Fairchild Semiconductor. These back-up generators are not to be used for prime power when reliable offsite power is available.

Fairchild Semiconductor submitted a BPT analysis for the fire pump and generators. BPT for each of the generators is the following:

PM/PM₁₀ – based on AP-42 Table 3.3-1 dated 10/96 for the fire pump and generators 1-3 (0.31 lb/MMBtu); based 06-096 CMR 103 for generators 4 and 5 (0.12 lb/MMBtu)

Fire pump:	0.22 lb/hr
Generator 1:	0.68 lb/hr
Generator 3:	0.68 lb/hr
Generator 4:	0.54 lb/hr
Generator 5:	0.50 lb/hr

SO₂ – based on 0.05% sulfur content

Fire pump:	0.04 lb/hr
Generator 1:	0.11 lb/hr
Generator 3:	0.11 lb/hr
Generator 4:	0.23 lb/hr
Generator 5:	0.21 lb/hr

NO_x – based on AP-42 Table 3.3-1 dated 10/96 (4.41 lb/MMBtu)

Fire pump:	3.18 lb/hr
Generator 1:	9.70 lb/hr
Generator 3:	9.70 lb/hr
Generator 4:	19.85 lb/hr
Generator 5:	18.39 lb/hr

CO – based on AP-42 Table 3.3-1 dated 10/96 (0.95 lb/MMBtu)

Fire pump:	0.68 lb/hr
Generator 1:	2.09 lb/hr
Generator 3:	2.09 lb/hr
Generator 4:	4.28 lb/hr
Generator 5:	3.96 lb/hr

VOC – based on AP-42 Table 3.3-1 dated 10/96 (0.36 lb/MMBtu)

Fire pump:	0.26 lb/hr
Generator 1:	0.79 lb/hr
Generator 3:	0.79 lb/hr
Generator 4:	1.62 lb/hr
Generator 5:	1.50 lb/hr

Opacity: Visible emissions from each of the generator stacks shall not exceed an opacity of 30% on a six (6) minute block average basis, except for no more than two (2) six (6) minute block averages in a 3-hour period (based on 06-096 CMR 101, units prior to year 2000).

Periodic Monitoring

Periodic monitoring for the fire pump and generators shall include recordkeeping to document the hours of operation both monthly and on a 12 month rolling total basis for each of the units. Documentation shall also be kept on the type of fuel used and the fuel sulfur content.

D. Particulate Emission Processes

Particulate matter is emitted by several processes at Fairchild Semiconductor, including bead blasting (parts cleaning) and aluminum flame spraying. Fabric filters control particulates such as oxides of antimony, silicon, aluminum, titanium, platinum, and gold.

BPT for vents emitting particulate matter, including SEF 4-1 A & B, SEF 12-331, SEF 12-332, SEF 12-336, shall be the use of fabric filters.

Visible emissions from each of the fabric filters shall not exceed 10% opacity on a six (6) minute block average basis, except for no more than one (1) six (6) minute block average in a one (1) hour period. Fairchild Semiconductor shall take corrective action if visible emissions from the fabric filter exceeds 5% opacity.

Periodic Monitoring

Periodic monitoring for the fabric filters shall include a maintenance log containing descriptions of any maintenance, routine or otherwise, performed on the filters.

E. VOC Processes and Abatement Unit

Various operations in the wafer fabrication process at Fairchild Semiconductor emit VOCs. Due to product specifications and manufacturing needs, the amount of VOCs emitted from a specific vent can vary. VOCs from all of the VOC emitting tools in Buildings 1, 2, 5, and 17 are collected and incinerated in the VOC abatement unit. Fairchild Semiconductor estimates that all of the VOCs emitted in Buildings 1, 2, and 5, 17 are collected and approximately 90% of the VOCs generated in Building 12 by Fairchild Semiconductor are collected. The collected VOCs are incinerated in the VOC abatement unit as required by this license. The remaining balance is vented to the atmosphere.

The VOC abatement unit, installed in 1996, consists of a zeolite concentrator followed by an incinerator unit with a 4.0 MMBtu/hr natural gas burner and propane hookup. The unit has its own stack.

VOC emissions are ducted from the VOC emitting tools to the VOC abatement unit. The unit shall be maintained and operated to meet a minimum treatment efficiency of 90% removal or demonstrate a 20 ppm output at all times the unit is operating. The removal efficiency shall be calculated as follows:

$$\frac{(VOC \text{ at inlet of abatement unit}) - (VOC \text{ at outlet of abatement unit})}{(VOCs \text{ at inlet of abatement unit})} \times 100$$

The accuracy of the testing equipment can make it difficult to record accurate measurements when the incinerator input is less than 200 ppm VOC and the corresponding output is less than 20 ppm, therefore Fairchild Semiconductor may use either the 90% removal efficiency or 20 ppm output concentration to determine compliance.

The unit is designed to operate within a temperature range of 1350°F-1500°F. When the monitored temperature is not within the normal range, the unit shuts down. The records of unit shutdowns and alarms shall be incorporated into the emissions calculations since the VOCs vent to the atmosphere when the unit is not operating.

Fairchild Semiconductor shall be limited to 25 tons/year VOC from its process equipment, based on a 12 month rolling total basis.

Fairchild Semiconductor shall operate the VOC abatement unit at all times the facility is operating from April 1 - September 30 and may need to operate the unit during October 1 - March 31, as necessary, to meet the facility-wide VOC limit (licensed in amendment A-370-71-W-A (April 13, 2009)). The requirement to operate the unit from April 1 – September 30 includes the official ozone season of May 1 through September 30, while taking into account the month of April which can also have high ozone numbers. The unit shall have a 97% uptime (including malfunctions and maintenance).

BPT for Fairchild Semiconductor's solvent processes is the following:

- use of a VOC abatement unit (with 90% efficiency; continuous monitoring of temperature, rotor rotation alarms, and air flow alarms; min. of 97% uptime, operated minimally from April 1 – Sept 30),
- monitoring of the tool exhaust fans by the Facility Management System (FMS),
- a limit of 25 tons/year of VOCs on a 12 month rolling total basis,
- visible emissions from the VOC abatement unit shall not exceed 10% opacity on a six-minute average basis, except for no more than one (1) six (6) minute average in any one (1) hour period, and
- visible emissions from VOC venting directly to the atmosphere shall not exceed 10% opacity on a six (6) minute average basis, except for no more than one (1) six (6) minute block average in a one (1) hour period.

Calculations

In order to show compliance with the annual VOC limit, Fairchild Semiconductor shall use the following to calculate emissions: purchase records, the distribution system which associates the solvents with either an uncontrolled process area or a controlled process area, and the VOC abatement unit control efficiency. When

the VOC abatement unit is not operating, those processes normally controlled shall be considered uncontrolled. The spent solvent records shall include the mass and volume of spent solvents shipped off-site, as well as test results of the VOC contents of the mixed solvents.

The following equations shall be used to calculate process VOC emissions:

- (1) (VOC Purchased and Used in Uncontrolled Process Area) – (Spent liquid VOC Collected from Uncontrolled Process Area) = Uncontrolled VOC Emitted
- (2) (VOC Purchased and Used in Controlled Process Area) – (Spent liquid VOC Collected from Controlled Process Area) = VOC Conveyed to the Control Device
- (3) (VOC Conveyed to Control Device)*(1-Control Efficiency) = VOC Emitted from the Control Device
- (4) (Uncontrolled VOC Emitted) + (VOC Emitted from the Control Device) = Total VOC Emissions

A simplified example using these equations to calculate emissions for a 12 month period follows:

VOC purchased and used in uncontrolled process area	90,000 lb	
Spent liquid VOC collected from uncontrolled process area	<u>-53,000 lb</u>	
Uncontrolled VOC emitted from the facility	37,000 lb	(1)
VOC purchased and used in controlled process area	68,000 lb	
Spent liquid VOC collected from controlled process area	<u>-24,425 lb</u>	
VOC conveyed to control device	43,575 lb	(2)
VOC conveyed to control device	43,575 lb	(2)
Control efficiency of abatement unit	93%	
VOC emitted from the control device	3,050 lb	(3) = (43,575) * (1 - .93)
Uncontrolled VOC emitted from the facility	<u>+37,000</u>	(1)
	<u>lb</u>	
Total actual VOC emissions	40,050 lb	(4) = (3) + (1)

For VOCs from insignificant activities, Fairchild Semiconductor shall maintain in its files an estimate of the VOCs emitted annually from such activities, to the extent that the VOC emissions are not included in the 12 month rolling average recordkeeping program. The estimate shall be updated annually if process or raw material changes have occurred that would affect the previous estimate.

Periodic Monitoring

Fairchild Semiconductor shall perform efficiency testing on the VOC abatement unit in 2010 and every other year thereafter (by December 1 of each year), testing

the concentrator inlet and oxidizer outlet. The efficiency testing method may measure VOCs or total hydrocarbons.

Fairchild Semiconductor shall keep records of events when the VOC abatement unit shuts down and events when the alarms are activated. The records shall include the dates and times the unit is not operating or controlling emissions (from when to when), and these records shall be used to determine compliance with the 97% uptime requirement, including malfunctions and maintenance.

Fairchild Semiconductor shall maintain VOC emission records in accordance with the equations above, on a monthly and 12 month rolling total.

Parameter Monitoring

The following parameters shall be monitored on the VOC abatement unit: combustion temperature; alarms that indicate the status of the concentrator's rotor; and the status of the fans located in the process vents.

F. Acid and Alkaline Emission Sources

Fairchild Semiconductor has several acid and alkaline emission points which are controlled by alkaline and acidic wet scrubbers. The pH of the scrubbing media shall be monitored and adjusted as appropriate. The pH of the acid vapor scrubbing media shall be maintained above 5; and the pH of the alkaline vapor scrubbing media shall be maintained at or below 5. In order to allow for flexibility to conduct routine maintenance and correct pH imbalances, Fairchild Semiconductor requested and received a 97% uptime requirement on the scrubbers in air emission license A-370-71-T-M (March 4, 2004).

Fairchild Semiconductor shall test each scrubber (acid and alkaline) for efficiency within 6 months of the signature of this license. Fairchild Semiconductor shall conduct a study of the scrubbers to determine appropriate operating conditions and recordkeeping for optimal scrubber control. Within one year of the date of the signature of this license, Fairchild Semiconductor shall submit a written report to the Department summarizing the study and results. The written report shall include proposed monitoring and recordkeeping to demonstrate proper operation of the scrubbers.

BPT for the acid and alkaline emission points shall be the use of wet scrubbers operated as follows:

- The pH of the acid vapor scrubber media shall be maintained above 5.
- The pH of the alkaline vapor scrubber media shall be maintained at or below 5.
- The Department may revise or replace the pH requirements based on the results of the study of the scrubbers required by this license.

- The wet scrubbers shall each be operated at a minimum of 97% of the time the wafer process is operating.
- Opacity from each scrubber stack shall not exceed 15% opacity on a six (6) minute average basis, except for no more than one (1) six (6) minute average in any one (1) hour period.

Periodic Monitoring

The pH of the acid and alkali scrubbers shall be checked and recorded once per shift.

A maintenance log shall be kept for each scrubber. The log shall contain dates and reasons for all emission upsets as well as descriptions and dates of any maintenance, routine or otherwise, performed on the scrubbers.

An operational log shall be kept for each scrubber. The log shall contain dates and reasons that the scrubber is not operating (including periods of pH deviation). Fairchild Semiconductor shall also record the operating time of the wafer process.

The scrubbers (acid and alkaline) shall be tested for efficiency within 6 months of the signature of this license under normal operating conditions.

G. Emergency Release Scrubber System

The emergency release scrubber is designated emission point EF 6-2 and it consists of a dual scrubber followed by a mist eliminator. The scrubber system is connected to rupture disks on storage containers which will be used to store large quantities of TCS (trichlorosylene) and HCl gas. The scrubber fans and controls run continuously and exhaust air from various enclosures which contain HCl/TCS piping. In the event of an accidental release, determined by a number of toxic gas monitoring points, water will be turned on to the scrubber and the toxic gasses will be abated to a safe concentration.

BPT for the control of the bulk gas delivery system is the use of the emergency release scrubber.

Periodic Monitoring

A maintenance and operational log shall be kept for the emergency release scrubber. The log shall contain dates and reasons for all emission upsets as well as descriptions and dates of any maintenance, routine or otherwise, performed on the scrubber. The log shall also contain dates and reasons for the activation of the emergency system scrubber.

H. HAP (Hazardous Air Pollutant) processes

Several VOCs emitted by Fairchild Semiconductor's contain HAPs (substances listed in Section 112(b) of the Clean Air Act). In order to meet BPT and keep the facility under the major source thresholds, Fairchild Semiconductor shall be limited to emissions of 9.9 tons/year of any single HAP and less than 24.9 tons/year total of all HAPs. Recordkeeping shall be done on a monthly basis documenting compliance with these 12 month rolling total limits.

Periodic Monitoring

Fairchild Semiconductor shall maintain HAP emission records using a similar calculation method as used for VOC emissions, on a monthly and 12 month rolling total. HAP emissions calculations shall be based on purchase records, MSDS (material safety data sheets) records for the various materials used in the facility, and whether the HAP emission points are controlled.

I. General Process Emissions

Visible emissions from any general process source not specifically listed in the license shall not exceed an opacity of 20% on a six (6) minute block average basis, except for no more than one (1) six (6) minute block average in a 1-hour period.

J. Parts Washer

The solvent degreaser located at Fairchild Semiconductor is subject to *Solvent Cleaners*, 06-096 CMR 130 (last amended June 28, 2004) if solvents containing greater than 5% VOCs by weight are used in the unit.

K. Annual Facility Emissions

To maximize operational flexibility and Fairchild Semiconductor's ability to respond to changes in fuel market conditions and to ensure that the South Portland plant remains below the Part 70 major source threshold, Fairchild Semiconductor shall be limited facility-wide to 99.9 TPY of PM, SO₂, NO_x and CO using the fuel equations below. Based on short-term emission limits, if SO₂, NO_x and CO are under 99.9 tons/year, PM is also under 99.9 tons/year. Fairchild Semiconductor shall use #2 fuel oil meeting ASTM D396 (max. sulfur content of 0.5%) or natural gas in its boilers; and fuel oil with a maximum sulfur content of 0.05% by weight in its emergency generators and fire pump. VOCs shall be limited to 25 tons/year from process sources and 15 tons/year from fuel burning sources. Based on short term emission limits, if SO₂, NO_x and CO are under 99.9 tons/year, VOC from fuel burning sources will also be under 15 tons/year.

The following equations shall be used to determine the 12-month rolling totals:

SO₂

$$\frac{\text{tons } SO_2}{\text{year}} = \frac{\text{tons gen } SO_2}{\text{year}} + \frac{\left(\frac{\text{lb } S}{\text{MMBtu } \#2 \text{ fuel}} \right) \left(\frac{2 \text{ lb } SO_2}{1 \text{ lb } S} \right) \left(\frac{\text{MMBtu}}{\text{gal } \#2} \right) \left(\frac{\text{gal } \#2}{\text{year}} \right) + \left(\frac{\text{lb } SO_2}{\text{scf } NG} \right) \left(\frac{\text{scf } NG}{\text{year}} \right)}{\frac{2000 \text{ lb}}{\text{ton}}}$$

$$\frac{\text{tons } SO_2}{\text{year}} = AD + \frac{[(0.141y)(s_2) + (0.0000006z)]}{2000} \leq 99.9 \text{ tons / year}$$

where:

- AD = annual quantity (tons) of SO₂ from the operation of all generators = sum of [(total hours of operation)(lb/hr limit)]/2000 for each unit;
y = annual quantity of #2 oil combusted (gallons) facility wide;
s₂ = average sulfur content by weight of #2 oil (percent);
z = annual quantity of natural gas combusted (cubic feet) facility wide.

NO_x

$$\frac{\text{tons } NO_x}{\text{year}} = \frac{\text{tons gen } NO_x}{\text{year}} + \frac{\left(\frac{0.3 \text{ lb } NO_x}{\text{MMBtu } \#2} \right) \left(\frac{\text{MMBtu } \#2}{\text{gal } \#2} \right) \left(\frac{\text{gal } \#2}{\text{year}} \right) + \left(\frac{\text{lb } NO_x}{\text{MMBtu } NG} \right) \left(\frac{\text{MMBtu } NG}{\text{scf } NG} \right) \left(\frac{\text{scf } NG}{\text{year}} \right)}{\frac{2000 \text{ lb}}{\text{ton}}}$$

$$\frac{\text{tons } NO_x}{\text{year}} = AD + \frac{[(0.042y) + (0.0000721z)]}{2000} \leq 99.9 \text{ tons / year}$$

where:

- AD = annual quantity (tons) of NO_x from the operation of all generators = sum of [(total hours of operation)(lb/hr limit)]/2000 for each unit;
y = annual quantity of #2 oil combusted (gallons) in boilers;
z = annual quantity of natural gas combusted (cubic feet) in boilers.

CO

$$\frac{\text{tons } CO}{\text{year}} = \frac{\text{tons gen } CO}{\text{year}} + \frac{\left(\frac{\text{lb } CO}{\text{gal } \#2} \right) \left(\frac{\text{gal } \#2}{\text{year}} \right) + \left(\frac{\text{lb } CO}{\text{scf } NG} \right) \left(\frac{\text{scf } NG}{\text{year}} \right)}{\frac{2000 \text{ lb}}{\text{ton}}}$$

$$\frac{\text{ton } CO}{\text{year}} = AD + \frac{[(0.005y) + (0.000084z)]}{2000} \leq 99.9 \text{ tons / year}$$

where:

AD = annual quantity (tons) of CO from the operation of all generators = sum of [(total hours of operation)(lb/hr limit)]/2000 for each unit;

y = annual quantity of #2 oil combusted (gallons) in total facility;

z = annual quantity of natural gas combusted (cubic feet) in total facility.

The following shall not be exceeded on a 12-month rolling total:

Total Allowable Annual Licensed Emissions for the Facility
(used to calculate the annual license fee)

Pollutant	Tons/Year
PM	99.9
PM ₁₀	99.9
SO ₂	99.9
NO _x	99.9
CO	99.9
VOC	25 process equipment; 15 fuel burning

Pollutant	Tons/year
Single HAP	9.9
Total HAP	24.9

III.AMBIENT AIR QUALITY ANALYSIS

Fairchild Semiconductor previously submitted an ambient air quality analysis demonstrating that emissions from the facility, in conjunction with all other sources, do not violate ambient air quality standards. The ambient modeling was performed as part of amendment A-370-71-B-T/R (June 3, 1997). An additional ambient air quality analysis is not required for this renewal.

ORDER

Based on the above Findings and subject to conditions listed below, the Department concludes that the emissions from this source:

- will receive Best Practical Treatment,
- will not violate applicable emission standards,
- will not violate applicable ambient air quality standards in conjunction with emissions from other sources.

The Department hereby grants Air Emission License A-370-71-V-R subject to the following conditions.

Severability. The invalidity or unenforceability of any provision, or part thereof, of this License shall not affect the remainder of the provision or any other provisions. This License shall be construed and enforced in all respects as if such invalid or unenforceable provision or part thereof had been omitted.

STANDARD CONDITIONS

- (1) Employees and authorized representatives of the Department shall be allowed access to the licensee's premises during business hours, or any time during which any emissions units are in operation, and at such other times as the Department deems necessary for the purpose of performing tests, collecting samples, conducting inspections, or examining and copying records relating to emissions (38 M.R.S.A. §347-C).
- (2) The licensee shall acquire a new or amended air emission license prior to commencing construction of a modification, unless specifically provided for in Chapter 115. [06-096 CMR 115]
- (3) Approval to construct shall become invalid if the source has not commenced construction within eighteen (18) months after receipt of such approval or if construction is discontinued for a period of eighteen (18) months or more. The Department may extend this time period upon a satisfactory showing that an extension is justified, but may condition such extension upon a review of either the control technology analysis or the ambient air quality standards analysis, or both. [06-096 CMR 115]
- (4) The licensee shall establish and maintain a continuing program of best management practices for suppression of fugitive particulate matter during any period of construction, reconstruction, or operation which may result in fugitive dust, and shall submit a description of the program to the Department upon request. [06-096 CMR 115]
- (5) The licensee shall pay the annual air emission license fee to the Department, calculated pursuant to Title 38 M.R.S.A. §353. [06-096 CMR 115]
- (6) The license does not convey any property rights of any sort, or any exclusive privilege. [06-096 CMR 115]
- (7) The licensee shall maintain and operate all emission units and air pollution systems required by the air emission license in a manner consistent with good air pollution control practice for minimizing emissions. [06-096 CMR 115]

- (8) The licensee shall maintain sufficient records to accurately document compliance with emission standards and license conditions and shall maintain such records for a minimum of six (6) years. The records shall be submitted to the Department upon written request. [06-096 CMR 115]
- (9) The licensee shall comply with all terms and conditions of the air emission license. The filing of an appeal by the licensee, the notification of planned changes or anticipated noncompliance by the licensee, or the filing of an application by the licensee for a renewal of a license or amendment shall not stay any condition of the license. [06-096 CMR 115]
- (10) The licensee may not use as a defense in an enforcement action that the disruption, cessation, or reduction of licensed operations would have been necessary in order to maintain compliance with the conditions of the air emission license. [06-096 CMR 115]
- (11) In accordance with the Department's air emission compliance test protocol and 40 CFR Part 60 or other method approved or required by the Department, the licensee shall:
 - A. perform stack testing to demonstrate compliance with the applicable emission standards under circumstances representative of the facility's normal process and operating conditions:
 - 1. within sixty (60) calendar days of receipt of a notification to test from the Department or EPA, if visible emissions, equipment operating parameters, staff inspection, air monitoring or other cause indicate to the Department that equipment may be operating out of compliance with emission standards or license conditions; or
 - 2. pursuant to any other requirement of this license to perform stack testing.
 - B. install or make provisions to install test ports that meet the criteria of 40 CFR Part 60, Appendix A, and test platforms, if necessary, and other accommodations necessary to allow emission testing; and
 - C. submit a written report to the Department within thirty (30) days from date of test completion.[06-096 CMR 115]
- (12) If the results of a stack test performed under circumstances representative of the facility's normal process and operating conditions indicate emissions in excess of the applicable standards, then:
 - A. within thirty (30) days following receipt of such test results, the licensee shall re-test the non-complying emission source under circumstances representative of the facility's normal process and operating conditions and in accordance with the Department's air emission compliance test protocol and 40 CFR Part 60 or other method approved or required by the Department; and

- B. the days of violation shall be presumed to include the date of stack test and each and every day of operation thereafter until compliance is demonstrated under normal and representative process and operating conditions, except to the extent that the facility can prove to the satisfaction of the Department that there were intervening days during which no violation occurred or that the violation was not continuing in nature; and
- C. the licensee may, upon the approval of the Department following the successful demonstration of compliance at alternative load conditions, operate under such alternative load conditions on an interim basis prior to a demonstration of compliance under normal and representative process and operating conditions.
- [06-096 CMR 115]
- (13) Notwithstanding any other provisions in the State Implementation Plan approved by the EPA or Section 114(a) of the CAA, any credible evidence may be used for the purpose of establishing whether a person has violated or is in violation of any statute, regulation, or Part 70 license requirement. [06-096 CMR 115]
- (14) The licensee shall maintain records of malfunctions, failures, downtime, and any other similar change in operation of air pollution control systems or the emissions unit itself that would affect emission and that is not consistent with the terms and conditions of the air emission license. The licensee shall notify the Department within two (2) days or the next state working day, whichever is later, of such occasions where such changes result in an increase of emissions. The licensee shall report all excess emissions in the units of the applicable emission limitation. [06-096 CMR 115]
- (15) Upon written request from the Department, the licensee shall establish and maintain such records, make such reports, install, use and maintain such monitoring equipment, sample such emissions (in accordance with such methods, at such locations, at such intervals, and in such a manner as the Department shall prescribe), and provide other information as the Department may reasonably require to determine the licensee's compliance status. [06-096 CMR 115]

SPECIFIC CONDITIONS

(16) Boilers 1, 2, 3, and 4

- A. Boilers 1, 2, 3, and 4 shall fire #2 fuel oil meeting the criteria of ASTM D396 or natural gas. Compliance shall be demonstrated by fuel records from the supplier showing the quantity and type of fuel delivered. [06-096 CMR 115, BPT]

- B. Emissions from the boilers shall not exceed the following [06-096 CMR 115 and 103, BPT]:

Boilers 1, 2, 3, and 4 Emission Limits

Equipment	Fuel		PM	PM ₁₀	SO ₂	NO _x	CO	VOC
Boiler 1 12.53 MMBtu/hr	#2 fuel oil	lb/MMBtu	0.1	-	-	-	-	-
		lb/hr	1.25	1.25	6.31	3.76	0.45	0.02
	Nat'l gas	lb/MMBtu	0.01	-	-	-	-	-
		lb/hr	0.13	0.13	0.01	1.22	1.02	0.07
Boiler 2 20.7 MMBtu/hr	#2 fuel oil	lb/MMBtu	0.1	-	-	0.3	-	-
		lb/hr	2.07	2.07	10.42	6.21	0.74	0.03
	Nat'l gas	lb/MMBtu	0.01	-	-	-	-	-
		lb/hr	0.21	0.21	0.01	2.01	1.69	0.11
Boiler 3 20.9 MMBtu/hr	#2 fuel oil	lb/MMBtu	0.1	-	-	0.3	-	-
		lb/hr	2.09	2.09	10.53	6.27	0.75	0.03
	Nat'l gas	lb/MMBtu	0.01	-	-	-	-	-
		lb/hr	0.21	0.21	0.01	2.03	1.70	0.11
Boiler 4 21.2 MMBtu/hr	#2 fuel oil	lb/MMBtu	0.1	-	-	0.3	-	-
		lb/hr	2.12	2.12	10.68	6.36	0.76	0.03
	Nat'l gas	lb/MMBtu	0.1	-	-	-	-	-
		lb/hr	0.21	0.21	0.01	2.06	1.73	0.11

- C. Visible emissions from the common stack (stack 2) shall not exceed an opacity of 20% opacity on a six (6) minute block average basis, except for no more than three (3) six (6) minute block averages in a continuous 3-hour period. [06-096 CMR 115, BPT]

(17) Back-up Fire Pump and Generators

- A. The back-up fire pump and generators shall each be limited to 500 hours per year, based on a 12 month rolling total. Hour meters shall be maintained and operated on each of the back-up units. [06-096 CMR 115, BPT]
- B. The back-up fire pump and generators shall only be operated for maintenance purposes and for situations arising from sudden and reasonably unforeseeable events beyond the control of the source. The back-up fire pump and generators shall not be used for prime power when reliable offsite power is available. A log shall be maintained documenting the date, time, and reason for operation. [06-096 CMR 115, BPT]
- C. The diesel fuel oil fired in the diesel back-up fire pump and generators shall not exceed 0.05% sulfur by weight. Compliance shall be based on fuel

records from the supplier showing the quantity of fuel delivered and the percent sulfur of the fuel. [06-096 CMR 115, BPT]

D. The back-up generators shall not exceed the following emission limits:

Unit	PM (lb/MMBtu)	Origin and Authority
Generator 4	0.12	06-096 CMR 103
Generator 5	0.12	06-096 CMR 103

Unit	PM (lb/hr)	PM ₁₀ (lb/hr)	SO ₂ (lb/hr)	NO _x (lb/hr)	CO (lb/hr)	VOC (lb/hr)
Fire Pump (0.72 MMBtu/hr)	0.22	0.22	0.04	3.18	0.68	0.26
Generator 1 (2.2 MMBtu/hr)	0.68	0.68	0.11	9.70	2.09	0.79
Generator 3 (2.2 MMBtu/hr)	0.68	0.68	0.11	9.70	2.09	0.79
Generator 4 (4.5 MMBtu/hr)	0.54	0.54	0.23	19.85	4.28	1.62
Generator 4 (4.17 MMBtu/hr)	0.50	0.50	0.21	18.39	3.96	1.50

[06-096 CMR 115, BPT]

E. Visible emissions from each of the diesel back-up fire pump and generators shall not exceed 30% opacity on a 6 minute block average, except for no more than two (2) six (6) minute block averages in a 3 hour period. [06-096 CMR 101]

(18) **Particulate Emission Processes**

- A. Vents emitting particulate matter shall be controlled by the use of fabric filters (including vents EF 4-1 A & B, EF 12-331, EF 12-332, and EF 12-336). [06-096 CMR 115, BPT]
- B. A maintenance log shall be kept for each of the fabric filters. The logs shall contain dates and reasons for all emission upsets, as well as descriptions of any maintenance (routine or otherwise) or corrective actions performed on the filters. [06-096 CMR 115, BPT]
- C. Visible emissions from each for the fabric filters shall not exceed 10% opacity on a six (6) minute block average basis, except for no more than one (1) six (6) minute block average in a one (1) hour period. Fairchild Semiconductor

shall take corrective action if visible emissions from the fabric filter exceeds 5% opacity. [06-096 CMR 101]

(19) **VOC Process and Abatement Unit**

- A. Facility-wide process VOC emissions shall be limited to 25 tons/year, based on a 12 month rolling total. [06-096 CMR 115, BPT]
- B. Fairchild Semiconductor shall maintain and operate the VOC abatement unit to control VOC emissions from the solvent vents in building 17 and the low volume, high concentration solvent vents in buildings 1, 2, 5, and 12. The abatement unit shall be maintained and operated to meet a minimum treatment efficiency of 90% removal or a stack concentration of less than 20 ppm. The removal efficiency shall be calculated as follows:

$$\frac{(VOC \text{ at inlet of abatement unit}) - (VOC \text{ at outlet of abatement unit})}{(VOCs \text{ at inlet of abatement unit})} \times 100$$

[06-096 CMR 115, BPT]

- C. Testing shall be performed in 2010 and every other year thereafter (by December 1 of each year) on the inlet and outlet streams of the VOC abatement unit. Testing shall be conducted in accordance with the appropriate EPA method for VOCs or the appropriate EPA method for total hydrocarbons. [06-096 CMR 115, BPT and A-370-71-W-A, April 13, 2009]

D. Monitors

1. The following shall be monitored on the VOC abatement unit:
 - a. combustion temperature (parameter monitor),
 - b. alarms that indicate the status of the concentrator's rotor, and
 - c. the status of the fans located in the process vents.
2. The combustion temperature parameter monitor must record accurate and reliable data. If the parameter monitor is recording accurate and reliable data less than 98% of the VOC abatement unit operating time during April 1 - September 30, the Department may initiate enforcement action and may include in that enforcement action any periods of time that the parameter monitor was not recording accurate and reliable data during that six month period unless the licensee can demonstrate to the satisfaction of the Department that the failure of the system to record accurate and reliable data was due to the performance of established quality assurance and quality control procedures or unavoidable malfunctions.

For the purposes of this condition, the parameter monitor shall be considered to be operating if the monitor records two data points in one

hour. Fairchild Semiconductor shall keep records of all periods of time that the VOC abatement unit is operating and the parameter monitor does not record at least two data points in one hour. This data shall be used to demonstrate compliance with the requirement that the parameter monitor record 98% of the time the source is operating within the April 1 – September 30 six month period.

[06-096 CMR 115, BPT]

- E. Fairchild Semiconductor shall keep records of events when the VOC abatement unit shuts down, including automatic shutoff when out of the temperature range of 1350°F-1500°F, and activated alarm events. The records shall include the time the unit is not operating. [06-096 CMR 115, BPT]
- F. Fairchild Semiconductor shall operate the VOC abatement unit at all times the wafer process is in operation during April 1 - September 30 with a 97% uptime requirement on the VOC abatement unit. For compliance purposes, the 3% downtime (97% uptime) calculation shall include any downtime of the abatement unit, regardless of cause (malfunctions, maintenance, etc). [06-096 CMR 115, BPT and A-370-71-W-A, April 13, 2009]
- G. Fairchild Semiconductor shall keep a maintenance log for the VOC abatement unit, recording the date, time, and reasons for all emissions upsets as well as all routine maintenance procedures. [06-096 CMR 115, BPT]
- H. Visible emissions from the VOC abatement unit shall not exceed 10% opacity on a six-minute average basis, except for no more than one (1) six (6) minute average in any one (1) hour period. [06-096 CMR 115, BPT]
- I. Visible emissions from vents emitting VOCs directly to the atmosphere shall not exceed 10% opacity on a six (6) minute average, except for no more than one (1) six (6) minute block average in a one (1) hour period. [06-096 CMR 115, BPT]
- J. Total VOC emissions from the processes at Fairchild Semiconductor shall be calculated on a 12 month rolling total, updated monthly, using the following equations:
 - 1. $(\text{VOC Purchased and Used in Uncontrolled Process Area}) - (\text{Spent liquid VOC Collected from Uncontrolled Process Area}) = \text{Uncontrolled VOC Emitted}$
 - 2. $(\text{VOC Purchased and Used in Controlled Process Area}) - (\text{Spent liquid VOC Collected from Controlled Process Area}) = \text{VOC Conveyed to the Control Device}$
 - 3. $(\text{VOC Conveyed to Control Device}) * (1 - \text{Control Efficiency}) = \text{VOC Emitted from the Control Device}$

4. $(\text{Uncontrolled VOC Emitted}) + (\text{VOC Emitted from the Control Device}) = \text{Total VOC Emissions}$

When the wafer process is operating and the VOC abatement unit is not operating, the emissions from the normally controlled areas shall be considered uncontrolled for the purposes of VOC emission calculations.
[06-096 CMR 115, BPT]

- K. For VOCs from insignificant activities, Fairchild Semiconductor shall maintain in its files an estimate of the VOCs emitted annually from such activities, to the extent that the VOC emissions are not included in the 12 month rolling average recordkeeping program. The estimate shall be updated annually if process or raw material changes have occurred that would affect the previous estimate. [06-096 CMR 115, BPT]

(20) Acid and Alkaline Emission Sources

- A. Fairchild Semiconductor shall operate wet scrubbers to control emissions from the acid and alkaline emission streams. The wet scrubbers shall be operated a minimum of 97% of the time the wafer process is operating on a 12 month rolling average basis. [06-096 CMR 115, BPT and A-370-71-T-M, March 4, 2004]
- B. The scrubber operations shall be monitored using pH. The pH shall be checked and recorded once per shift.
1. The pH of the acid vapor scrubbing media shall be maintained above 5.
 2. The pH of the alkaline vapor scrubbing media shall be maintained at or below 5.
- [06-096 CMR 115, BPT]
- C. A maintenance log shall be kept for each of the scrubbers. The log shall contain dates, times, and reasons for all emission upsets, as well as description and dates of any maintenance, routine or otherwise, performed on the scrubbers. [06-096 CMR 115, BPT]
- D. An operations log shall be kept for each of the scrubbers. The log shall contain the dates, times, and reasons that the scrubbers are not operating (including periods of pH deviation). Fairchild Semiconductor shall also record the operating time of the wafer process. [06-096 CMR 115, BPT and A-370-71-T-M, March 4, 2004]
- E. Testing of all the wet scrubbers shall occur once within 6 months of the signature of this license during a representative production level. Test results

shall include efficiency of the scrubbers, including inlet and outlet mass rates and concentrations. [06-096 CMR 115, BPT]

- F. Opacity from each scrubber stack shall not exceed 15% opacity on a six (6) minute average basis, except for no more than one (1) six (6) minute average in any one (1) hour period. [06-096 CMR 115, BPT and A-370-71-S-M, January 22, 2004]
- G. Fairchild Semiconductor shall conduct a study of the wet scrubbers to determine appropriate operating and recordkeeping requirements for optimal scrubber control. Within a year of the date of signature of this license, Fairchild Semiconductor shall submit a written report to the Department summarizing the summary and results. The written report shall include proposed monitoring and recordkeeping to demonstrate proper operation of the scrubbers. [06-096 CMR 115, BPT]

(21) Emergency Release Scrubber System

- A. The bulk gas delivery system shall be controlled by the use of the emergency release scrubber system. [A-370-71-R-M, Dec. 19, 2003]
- B. A maintenance and operational log shall be kept for the emergency release scrubber system. The log shall contain dates and reasons for all emission upsets or activation of the system, as well as descriptions and dates of any maintenance (routine or otherwise) performed on the system. [A-370-71-R-M, Dec. 19, 2003]

(22) HAP Process

- A. Fairchild Semiconductor shall be limited to 9.9 tons/year of any single HAP and 24.9 tons/year of total facility HAPs, based on a 12 month rolling total. [06-096 CMR 115, BPT]
- B. Fairchild Semiconductor shall maintain records on a monthly and 12 month rolling total for each HAP and total facility HAPs. The HAP emission calculations may be directly correlated to the VOC emissions calculations in Condition (19)(J) of this license. HAP emissions calculations shall be based on purchase records, MSDS (material safety data sheets) records for the various materials used in the facility, and whether the HAP emission points are controlled. [06-096 CMR 115, BPT]

(23) **General Process Sources**

Visible emissions from any general process source not specifically listed in the license shall not exceed an opacity of 20% on a six (6) minute block average basis, except for no more than one (1) six (6) minute block average in a 1-hour period. [06-096 CMR 101]

(24) **Parts Washers**

Parts washers at Fairchild Semiconductor are subject to *Solvent Cleaners*, 06-096 CMR 130 (last amended June 28, 2004) if solvents containing greater than 5% VOCs by weight are used in the units. [06-096 CMR 130]

(25) **Facility Wide Emissions**

From fuel records, the following equations shall be used to determine compliance with the annual emission limits. Fairchild Semiconductor shall maintain monthly records documenting each pollutant for the 12 month rolling total. If the requirements for less than 99.9 tons/year of SO₂, NO_x, and CO are met, calculations show that PM emissions will also not exceed 99.9 tons/year and VOC emissions from fuel burning equipment will not exceed 15 tons/year.

$$\text{SO}_2 \quad \frac{\text{tons SO}_2}{\text{year}} = AD + \frac{[(0.141y)(s_2) + (0.0000006z)]}{2000} \leq 99.9 \text{ tons / year}$$

where:

- AD = annual quantity (tons) of SO₂ from the operation of all generators = sum of [(total hours of operation)(lb/hr limit)]/2000 for each unit;
- y = annual quantity of #2 oil combusted (gallons) facility wide;
- s₂ = average sulfur content by weight of #2 oil (percent);
- z = annual quantity of natural gas combusted (cubic feet) facility wide.

NO_x

$$\frac{\text{tons NO}_x}{\text{year}} = AD + \frac{[(0.042y) + (0.0000721z)]}{2000} \leq 99.9 \text{ tons / year}$$

where:

- AD = annual quantity (tons) of NO_x from the operation of all generators = sum of [(total hours of operation)(lb/hr limit)]/2000 for each unit;
- y = annual quantity of #2 oil combusted (gallons) in boilers;
- z = annual quantity of natural gas combusted (cubic feet) in boilers.

CO

$$\frac{\text{ton CO}}{\text{year}} = AD + \frac{[(0.005y) + (0.000084z)]}{2000} \leq 99.9 \text{ tons / year}$$

where:

- AD = annual quantity (tons) of CO from the operation of all generators = sum of [(total hours of operation)(lb/hr limit)]/2000 for each unit;
y = annual quantity of #2 oil combusted (gallons) in total facility;
z = annual quantity of natural gas combusted (cubic feet) in total facility.

(26) **Annual Emission Statement**

In accordance with *Emission Statements*, 06-096 CMR 137 (last amended November 8, 2008), the licensee shall annually report to the Department the information necessary to accurately update the State's emission inventory by means of:

- 1) A computer program and accompanying instructions supplied by the Department; or
- 2) A written emission statement containing the information required in 06-096 CMR 137.

The emission statement must be submitted as specified by the date in 06-096 CMR 137.

- (27) Fairchild Semiconductor shall notify the Department within 48 hours and submit a report to the Department on a quarterly basis if a malfunction or breakdown in any component causes a violation of any emission standard (38 M.R.S.A. §605).

DONE AND DATED IN AUGUSTA, MAINE THIS 30th DAY OF December, 2009.

DEPARTMENT OF ENVIRONMENTAL PROTECTION

BY: James P. Brooker
DAVID P. LITTLE, COMMISSIONER

The term of this license shall be five (5) years from the signature date above.

PLEASE NOTE ATTACHED SHEET FOR GUIDANCE ON APPEAL PROCEDURES

Date of initial receipt of application: February 21, 2008

Date of application acceptance: April 16, 2008

Date filed with the Board of Environmental Protection:

This Order prepared by Kathleen E. Tarbuck, Bureau of Air Quality.

